

Test Scenario

Instructions

Version 1.1 • 8 DEC 2006



Version History

Current Framework documents, including a glossary, are available at www.dir.state.tx.us/pubs/framework/.

Release Date	Description
08-Dec-2006	Version 1.1 Released. Revised Appendix B (Text Identifier Naming Conventions, Alternative 1).
24-May-2006	Version 1.0 Instructions and Template Released.

Contents

Introduction	1
Use of the Test Scenario	1
Section 1. Overview	2
Section 2. Test Identifier	2
Section 3. Requirements Traceability Matrix	3
Section 4. Test Scenario Summary	4
Section 5. Test Scenarios	4
Section 6. References.....	10
Section 7. Glossary	10
Section 8. Revision History	10
Section 9. Appendices	10
Appendix A. Test Scenarios Organization.....	11
Appendix B. Test Identifier Naming Conventions.....	12

Introduction

The Test Scenario Template is included within the Texas Project Delivery Framework (Framework) to establish a consistent method for documenting test scenarios, descriptions, procedures, and other testing information. Consistency in documenting test scenarios, descriptions, and procedures creates consistency in planning and executing testing of information technology (IT) systems.

A test scenario describes the details required to test a major function for a system and consists of one or more test descriptions. A test description is a documented set of steps for testing a subset of the function documented within the scenario. A test description consists of one or more test procedures.

A test procedure is the set of steps required to be performed to execute the test.

Test scenarios, descriptions, and procedures are used in conjunction with the Test Plan to evaluate the correctness, completeness, and quality of an IT system. Testing involves any activity performed to evaluate an attribute or capability of a system or component of a system and determine if it meets its expected and required results. Methodical test planning and execution reduces project risk. A well-planned and executed test effort can reduce project risk by reducing uncertainty in implementation of the system or system component.

Use of the Test Scenario

Within the Framework, test scenarios are initiated in the Project Planning Review Gate and completed, reviewed, and approved at a project level, and executed in the Implementation Review Gate.

The Test Scenario Template should be used to develop and document the test scenarios, descriptions, and procedures for each project. The format of the Test Scenario Template serves as a basis for creating an actual project document.

Alternative methods for organizing test scenarios are provided in the appendix. Refer to Test Scenario Organization in the appendix and select and utilize one of the alternatives described. The Test Scenario Template Instructions and Template utilize Alternative 1.

Test scenarios should be developed in coordination with and be accessible by appropriate project team and stakeholder entities. In addition, it should be updated to maintain consistency with the Test Plan and other project information and documents throughout the life of the project.

Section 1. Overview

Provide high-level introductory information on the test scenarios for the product being tested.

A test scenario provides a complete test for a major function or use case for a system and consists of one or more test descriptions. Each test description supports a subset of major functionality, as defined by the System Requirements Specification (SyRS) and/or the Software Requirements Specification (SRS).

A test description consists of one or more test procedures. A test procedure is a documented step-by-step process that supports a subset of major functionality, as described by the scenario.

The successful completion of all of the test procedures and test descriptions in the test scenario constitutes the successful completion of the test scenario.

The steps in a test procedure must be executed in a particular order. A set of test procedures may need to be performed in a particular order to complete a test description successfully. Many systems may require test descriptions to be executed in a particular order. For some systems, test descriptions may be executed in any order; however, the documented test scenarios may still recommend a particular order of execution in order to support more efficient completion of the complete scenario.

Section 2. Test Identifier

Specify the method used for identifying test scenarios, procedures, descriptions, and other test information. A guideline for identifying test scenarios, procedures, descriptions, and other test information is provided below.

Each of the following should have a unique reference number:

- test scenario
- test description
- test procedure

In addition, data sets and other similar information used during testing should have a unique reference number.

Test descriptions should share a prefix identifier with their associated test scenario. If a test procedure is used for multiple test descriptions, the test procedure should share a prefix or middle identifier with their test descriptions.

Alternatives for naming test identifiers are provided in the appendix. Refer to Test Identifier Naming Conventions. Select, specify, and utilize one of the alternatives specified, or specify and utilize a different method. This template utilizes Alternative 1.

Section 3. Requirements Traceability Matrix

In this section, provide a reference to the location of the matrix that specifies the traceability of requirements (as documented in the SyRS and SRS) to design components, code components, test scenarios, test descriptions, and test procedures. If data sets or other test-related information are identified, then show the traceability of these items as well.

A sample Requirements Traceability Matrix (RTM) template is provided as a Framework tool in the appendix of the SyRS Template Instructions.

The RTM is initiated in the SyRS and is updated appropriately during the life of the project to indicate traceability to the design elements documented in the SyDD, the software requirements documented in the SRS, and the design elements documented in the Software Design Description (SDD). The completed RTM assures that every requirement has been addressed in the design and that every design element addresses a requirement. The RTM also provides the necessary traceability for integration, acceptance, regression, and performance testing.

The RTM referenced in the test scenario should:

- Indicate traceability of the system requirements to the system design elements, software requirements, and software design elements
- Contain the columns necessary to illustrate traceability for integration, acceptance, regression, and performance testing, including test scenario reference, test description reference, test procedure reference
- Indicate traceability from the system and software design elements to the appropriate test scenarios, test descriptions, and test procedures
- Indicate the source or origin of each requirement

Note: Maintaining the RTM as a separate document and performing appropriate updates in a controlled fashion—rather than including it within the SyRS and requiring that the SyRS be revised each time the RTM is modified—is more efficient.

Separating the RTM into two matrices—rather than maintaining one large matrix that contains all traceability information—may enhance the ability to maintain the traceability information.

If the requirements traceability information that indicates the source and traceability of the system requirements to the system design elements, software requirements, and software design elements is comprehensive and baselined, the matrix referenced in the test scenarios may address traceability to testing scenarios, descriptions, and procedures. The traceability matrix may contain information indicating traceability from the system and software design elements to the appropriate test scenarios, test descriptions, and test procedures.

Design Element	Test Scenario Reference	Test Description Reference	Test Procedure Reference
ProjNameReq10000	ProjName100000	ProjName100100	ProjName100101
			ProjName100102
		ProjName100200	ProjName100201
			ProjName100202
			ProjName100203
	ProjName200000	ProjName200100	ProjName200101
			ProjName200102
			ProjName200103

Table 1. Example of traceability matrix indicating traceability from design elements to test scenarios, descriptions, and procedures

Section 4. Test Scenario Summary

Provide a summary of the test effort, listing the total number of test scenarios to be executed, the total number of test descriptions for each test scenario, and the total number of test procedures to be executed for each test description. Increment the totals appropriately to account for test procedures repeated in multiple test descriptions for a scenario. Derive this overview from the traceability matrix and summarize it in the table provided in the template. An example is included below.

The PASS/FAIL column should be used to indicate the status of the associated test scenario once it is executed. Unless otherwise indicated, the successful completion of all rows in this table shall constitute the successful completion of the test scenario. If any item within the scenario is incomplete or fails, the PASS/FAIL column should not indicate that the scenario has passed.

PASS/FAIL	Test Scenario ID	Total Test Descriptions for this Scenario	Total Test Procedures for this Scenario
	ProjName100000	2	10
	ProjName200000	3	17
	ProjName300000	5	52

Table 2. Example of Test Scenario Summary

Section 5. Test Scenarios

Customize the following sections to contain the test scenarios and their associated test descriptions and test procedures. Each subsection should be labeled sequentially and titled appropriately for a specific test scenario, description, and procedure.

5.1 Test Scenario *PROJNAME100000*

Describe the specific test scenario to be tested. Include in the description a reference to the requirements to be satisfied and the functionality to be tested.

5.1.1 Test Description *PROJNAME100100*

Describe the test to be performed to assure the correctness of a specific functionality contained within its associated test scenario. The test description shall reference all test procedures required to satisfy the test description and the order in which they will be performed (when there is a need to perform them in a particular order). The test description should also reference associated test information, including any setups or data shared across test procedures. An example test description table is included below.

The PASS/FAIL column should be used to indicate the status of the associated test once it is executed. Unless otherwise indicated, the successful completion of all rows in this table shall constitute the successful completion of the test description. If any item within the description is incomplete or fails, the PASS/FAIL column should not indicate that the description has passed.

The test procedures for this description should be documented in the sequence of execution that is specified for the test description, including any repetition of procedures, setups, or data. This method assures that the execution of the test description can be performed exactly according to procedures, in order, and with no need to reference more than one section of the document.

An example of a test description is included below. Only the first two steps are depicted in the test procedures.

PASS / FAIL	Sequence of Execution #	Procedure	Setup / Initialization	Data
	1	Projname100101	ProjnameSetup000001	Projnamedata000012
	2	Projname100102	State resulting from success of procedure Projname100101	Projnamedata000001
	3	Projname100103	ProjnameSetup000001	None
	4	Projname100102	State resulting from success of procedure Projname100103	ProjNamedata000004
	5	Projname100104	ProjnameSetup000004	Data set resulting from success of step 4
	6	Projname100105	ProjnameSetup000005	Data set resulting from success of step 5

Table 3. Example of a Test Description

5.1.1.1 Test for Test Description 100100 – Sequence Item 1 – Test Procedure 100101 Summary

Provide an overview of the Test Procedure used in Step 1 of the testing to satisfy Test Description 100100.

5.1.1.2 Setup/Initialization/Special Instructions for ProjNameSetup000001 for Test Description 100100 – Sequence Item 1 – Test Procedure 100101

Describe the setup, initialization, and other special instructions specific to this test. Include in the description:

- configuration of the hardware and software which provides the infrastructure for the item under test
- the initial settings and conditions for the hardware and software which provides the infrastructure for the item under test
- the test tools, their configuration, initial settings, and conditions for this test
- special instructions to the tester (e.g., the expected results onscreen and in the database must match)

5.1.1.3 Data for ProjNameData000012 for Test Description 100100 – Sequence Item 1 – Test Procedure 100101

Specify file names for data or the actual data required to execute Step 1 – Test Procedure 100101. Files or other data available in electronic formats should be placed under configuration control. Textual data within this document may be provided in the form of tables or other means.

Data may include:

- initial inputs
- data provided during a particular step
- databases that may be accessed by the application
- erroneous data intended to challenge application integrity, performance, or availability
- data required for test tools
- other data used to prepare for testing or during testing

5.1.1.4 Steps for Test Description 100100 – Sequence Item 1 – Test Procedure 100101

Specify the steps for executing Test Procedure 100101. The steps must be executed in the order described and, unless otherwise designated, each step should be considered critical to the success of the procedure. The execution of this procedure should result in a step-by-step pass/fail result.

The PASS/FAIL column should be used to indicate the status of the associated step once it is executed. Unless otherwise indicated, the successful completion of all rows in this table shall constitute the successful completion of the test description. If any step within the procedure is incomplete or fails, the PASS/FAIL column should not indicate that the step has passed.

An example of a test procedure is included below.

PASS / FAIL	TEST PROCEDURE 100101 STEP
	Ensure that the configuration described in section 5.1.1.2 is correct.
	Ensure that the initialization data described in 5.1.1.3 is correct and in the following directory c:/xxx.
	Launch Microsoft Internet Explorer Version 6.xx.
	Open URL c:/xxx/yyy/zz.htm
	Enter the name "John Smith" in the field titled "Name" and hit enter.
	Enter valid password in the field titled "Password." (This is a case-sensitive password.)
	Ensure that the application now displays a new screen with banner title "Registration."
	Ensure that this screen displays the name (from step 5) in the "Name" field and an associated address in the address fields.
	Ensure that the address displayed for the name matches the database contents for that name.
	In the field titled "Action," choose the "Update all" action.
	Ensure that the display shows "Update Completed" at the bottom of the page, upon completion of the action.
	Inspect the database table to ensure the information described in file c:/xxx.txt has been deleted.
END OF TEST PROCEDURE	

Table 4. Example of a Test Procedure

5.1.1.5 Expected Results for Test Description 100100 – Sequence Item 1 – Test Procedure 100101

Specify the results that indicate that the test of the item is successful. Unless otherwise indicated, the success of a test procedure requires that each step be executed successfully. This subsection should specify this or other modified criteria. The criteria may include values within tolerance levels (e.g., numbers in a range from five to ten are acceptable).

5.1.2 Test Description *PROjNAME100200*

Describe the test to be performed to assure the correctness of a specific functionality contained within its associated test scenario. The test description shall reference all test procedures required to satisfy the test description and the order in which they will be performed (when there is a need to perform them in a particular order). The test description should also reference associated test information, including any setups or data shared across test procedures. An example test description table is included below.

The PASS/FAIL column should be used to indicate the status of the associated test once it is executed. Unless otherwise indicated, the successful completion of all rows in this table shall

constitute the successful completion of the test description. If any item within the description is incomplete or fails, the PASS/FAIL column should not indicate that the description has passed.

The test procedures for this description should be documented in the sequence of execution that is specified for the test description, including any repetition of procedures, setups, or data. This method assures that the execution of the test description can be performed exactly according to procedures, in order, and with no need to reference more than one section of the document.

An example of a test description is included below. Only the first two steps are depicted in the test procedures.

PASS / FAIL	Sequence of Execution #	Procedure	Setup / Initialization	Data
	1	Projname100201	ProjnameSetup000001	Projnamedata000012
	2	Projname100202	State resulting from success of procedure Projname100201	Projnamedata000001
	3	Projname100203	ProjnameSetup000001	None
	4	Projname100202	State resulting from success of procedure Projname100203	ProjNamedata000004
	5	Projname100204	ProjnameSetup000004	Data set resulting from success of step 4
	6	Projname100205	ProjnameSetup000005	Data set resulting from success of step 5

Table 5. Example of a Test Description

5.1.2.1 Test for Test Description 100200 – Sequence Item 1 – Test Procedure 100201 Summary

Provide an overview of the Test Procedure used in Step 1 of the testing to satisfy Test Description 100200.

5.1.2.2 Setup/Initialization/Special Instructions for ProjNameSetup000001 for Test Description 100200 – Sequence Item 1 – Test Procedure 100201

Describe the setup, initialization, and other special instructions specific to this test. Include in the description:

- configuration of the hardware and software which provides the infrastructure for the item under test
- the initial settings and conditions for the hardware and software which provides the infrastructure for the item under test
- the test tools, their configuration, initial settings, and conditions for this test
- special instructions to the tester (e.g., the expected results onscreen and in the database must match)

5.1.2.3 Data for ProjNameData000012 for Test Description 100200 – Sequence Item 1 – Test Procedure 100201

Specify file names for data or the actual data required to execute Step 1 – Test Procedures 100201. Files or other data available in electronic formats should be placed under configuration control. Textual data within this document may be provided in the form of tables or other means.

Data may include:

- initial inputs
- data provided during a particular step
- databases that may be accessed by the application
- erroneous data intended to challenge application integrity, performance, or availability
- data required for test tools
- other data used to prepare for testing or during testing

5.1.2.4 Steps for Test Description 100200 – Sequence Item 1 – Test Procedure 100201

Specify the steps for executing Test Procedure 100201. The steps must be executed in the order described and, unless otherwise designated, each step should be considered critical to the success of the procedure. The execution of this procedure should result in a step-by-step pass/fail result.

The PASS/FAIL column should be used to indicate the status of the associated step once it is executed. Unless otherwise indicated, the successful completion of all rows in the table shall constitute the successful completion of the test description. If any step within the procedure is incomplete or fails, the PASS/FAIL column should not indicate that the step has passed.

An example of a test procedure is included below.

PASS / FAIL	TEST PROCEDURE 100201 STEP
	Ensure that the configuration described in section 5.1.2.2 is correct.
	Ensure that the initialization data described in 5.1.2.3 is correct and in the following directory c:/xxx.
	Launch Microsoft Internet Explorer Version 6.xx.
	Open URL c:/xxxx/yyyy/zz.htm
	Enter the name "John Smith" in the field titled "Name" and hit enter.
	Enter valid password in the field titled "Password". (This is a case sensitive password.)
	Ensure that the application now displays a new screen with banner title "Registration."
	Ensure that this screen displays the name (from step 5) in the "Name" field and an associated address in the address fields.
	Ensure that the address displayed for the name matches the database contents for that name.

PASS / FAIL	TEST PROCEDURE 100201 STEP
	In the field titled "Action," choose the "Update all" action.
	Ensure that the display shows "Update Completed" at the bottom of the page, upon completion of the action.
	Inspect the database table to ensure that the information described in file c:xxx.txt has been deleted.
END OF TEST PROCEDURE	

Table 6. Example of Test Procedure

5.1.2.5 Expected Results for Test Description 100200 – Sequence Item 1 – Test Procedure 100201

Specify the results that indicate that the test of the item is successful. Unless otherwise indicated, the success of a test procedure requires that each step be executed successfully. This subsection should specify this or other modified criteria. The criteria may include values within tolerance levels (e.g., numbers in a range from five to ten are acceptable).

Section 6. References

Identify the information sources referenced in the test scenarios and utilized in developing the test scenarios. Include for each the document number, title, date, and author.

Section 7. Glossary

Define all terms and acronyms required to interpret the test scenarios properly.

Section 8. Revision History

Identify changes to the test scenarios.

Section 9. Appendices

Include any relevant appendices.

Appendix A. Test Scenarios Organization

Two alternatives for specifying test scenarios are specified below. Select one of the following alternatives.

Alternative 1

The document may be organized with a test scenario, followed by its specific test description(s), test procedures, in the order of their execution, including any repetition, would then follow each test description.

This approach is most direct and easiest to follow during the testing process; however, there may be a great deal of redundancy using this approach, since test setup, test data, and some specific test procedures may be re-used multiple times across the various test descriptions and scenarios. In this case, the information would have to be repeated, and any updates to the information would have to be changed each time the information is repeated.

If the document is organized in this fashion, each test scenario (Section 5.1, 5.2, etc.) will be followed by a one or more test descriptions (Section 5.1.1, 5.1.2) for its associated test scenario (in this case 5.1) and a given set of test procedures (Section 5.1.1.1, 5.1.1.2, 5.1.1.3, etc.) will be associated with a particular test description (in this case, Section 5.1.1).

Alternative 2

The document may be organized with a test scenario, followed by its specific test description(s). After describing all test scenarios and their associated test descriptions, a separate section can describe every test procedure.

This approach minimizes redundancy and the chance of errors in the document by describing the test procedures only once (as well as the test data sets and other information) and then referencing them in the appropriate test descriptions. Conversely, this approach will require the creation of some form of additional test documentation or other means of realization to ensure that the tester can follow the step-by-step process for a specific test. Additional test documentation is necessary, for example, because the test procedures are all grouped together regardless of their associations with a specific test description and are referred to only in the test descriptions.

If the document is organized in this manner, then each test scenario (Section 5.1, 5.2, etc.) will be followed by one or more test descriptions (Section 5.1.1, 5.1.2) for its associated test scenario (in this case Section 5.1), and each test description (section 5.1.1, 5.1.2, etc.) will refer to the test procedures to be used to satisfy that test description; however, the test procedures will be described in a separate section regardless of the test descriptions or test scenarios which use them.

Appendix B. Test Identifier Naming Conventions

Two alternative methods for identifying test scenarios, procedures, descriptions, and other test information are described below. Select one of the alternatives specified, or specify another method.

Note: When using any identification method, consider including project name in the naming convention.

Alternative 1

Test scenarios are identified with a project name prefix and numeric identifier, for example: ProjName100000, ProjName200000, etc.

Test descriptions are numbered using the third and fourth digits of these identifiers. For example, test descriptions for scenario ProjName100000 are designated ProjName100100, ProjName100200, etc.

Test procedures are numbered using the fifth and sixth digits. For example, test procedures for Test Description ProjName100100 are designated ProjName100101, ProjName100102, etc.

If any of the test procedures (or other data sets or related information) is reused and associated with more than one scenario and/or description, use zeros in the appropriate digits to indicate the association with more than one scenario and/or description. For example, ProjName000001 indicates that procedure 01 is not associated with a single scenario or description. ProjName100001 indicates that procedure 01 of scenario 10 is not associated with a particular description.

Additional examples of Alternative 1 are provided below.

In the following illustrations:

- *ProjName* represents the name of the project
- *ss* represents the portion of the identifier that references scenario
- *dd* represents the portion of the identifier that references description
- *pp* represents the portion of the identifier that references procedure

Description	Naming Convention	Example
Name of Scenario 10 of the HR Upgrade project	ProjName ss 0000	HR Upgrade 100000
Name of Description 01 of Scenario 10 of the HR Upgrade project	ProjName ssdd 00	HR Upgrade 100100
Name of Procedure 01 of Scenario 10, Description 01 of the HR Upgrade project	ProjName ssddpp	HR Upgrade 100101
Name of Procedure 10 of the HR Upgrade project – Procedure 10 is not associated with a particular scenario or description	ProjName 0000pp	HR Upgrade 100010

Description	Naming Convention	Example
Name of Procedure 30 of Scenario 21 of the HR Upgrade project – Procedure 30 of Scenario 21 is not associated with a particular description	ProjName0000pp	HR Upgrade 210030

Table 7. Example of Test Identifier Alternative 1

Alternative 2

Each test scenario, test description, and test procedure will have a reference number that uniquely identifies the scenario/description/procedure and also indicates the parent-child relationship between the two, if applicable. The naming convention consists of a numeric identifier in the scenario_description_procedure format. Using this convention, the first test scenario identified is 1_0_0. The first test description in the first scenario is identified as 1_1_0. The first test procedure in the first test description of the first scenario is identified as 1_1_1. Test procedures not associated with a scenario or description are identified as 0_0_x, where x is an assigned sequence number. Examples of Alternative 2 are provided below.

In the following illustrations:

- *ProjName* represents the name of the project
- *s* represents the portion of the identifier that references scenario
- *d* represents the portion of the identifier that references description
- *p* represents the portion of the identifier that references procedure

Example Description	Naming Convention	Example
Scenario	ProjNames_0_0	ProjName1_0_0
Description	ProjNames_d_0	ProjName1_1_0
Procedure associated with scenario and/or description	ProjNames_d_p	ProjName1_1_1
Procedure not associated with scenario or description	ProjName0_0_p	ProjName0_0_1

Table 8. Example of Test Identifier Alternative 2